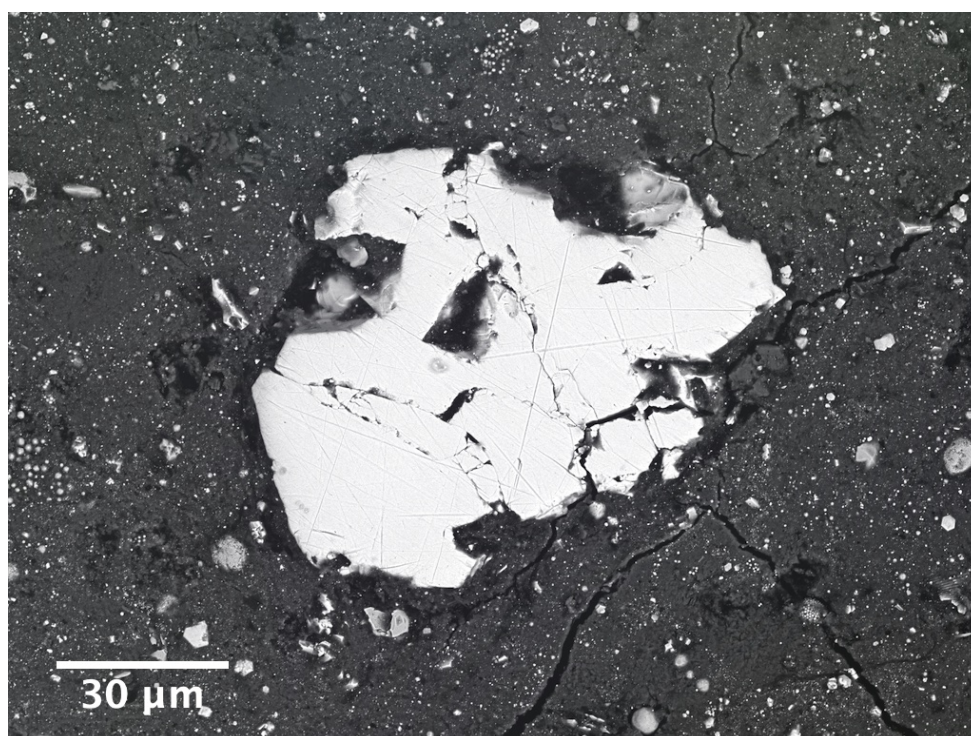
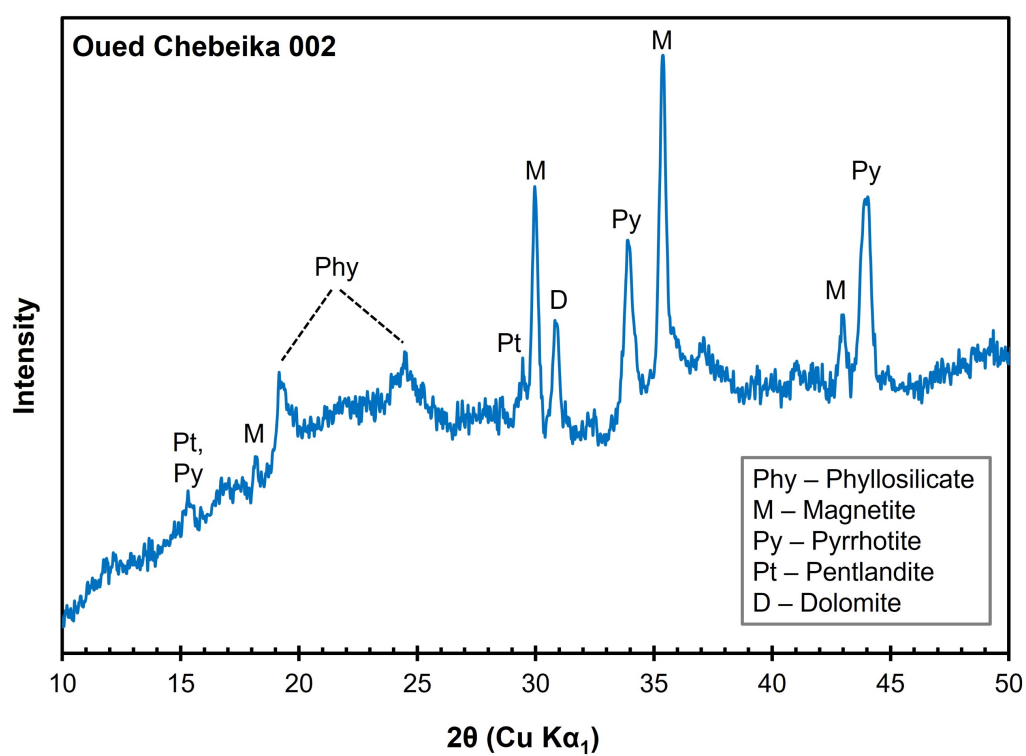


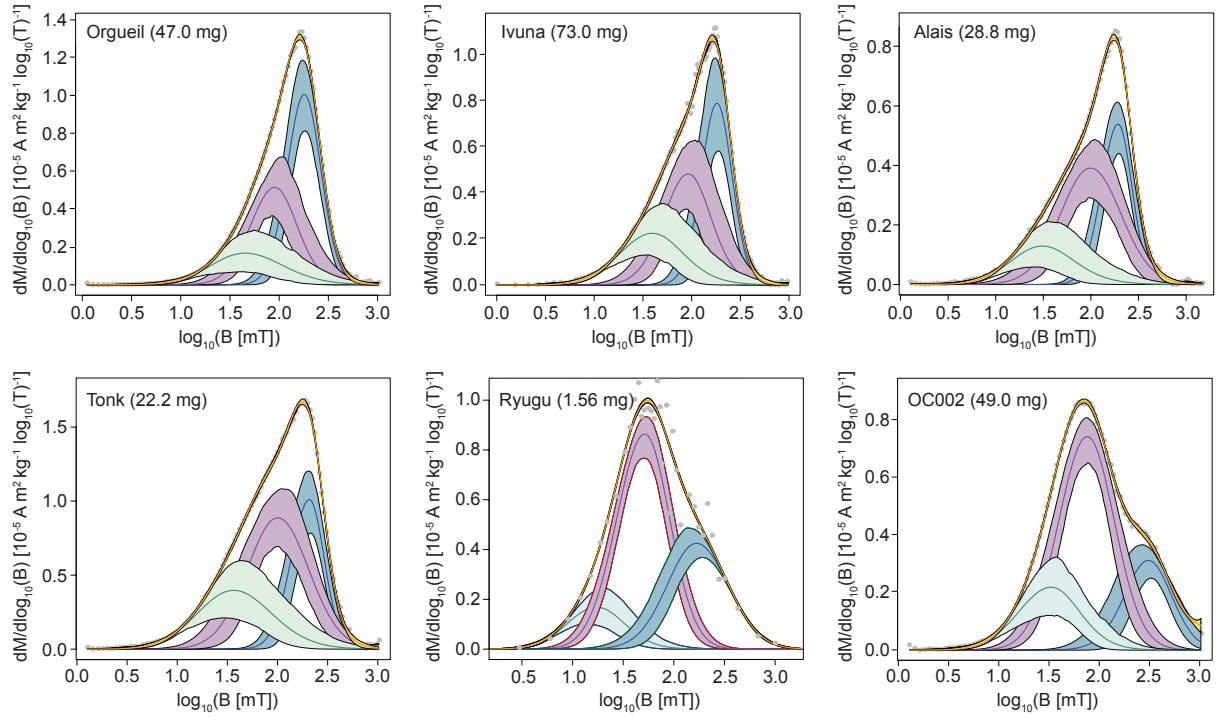
## Supplementary figures



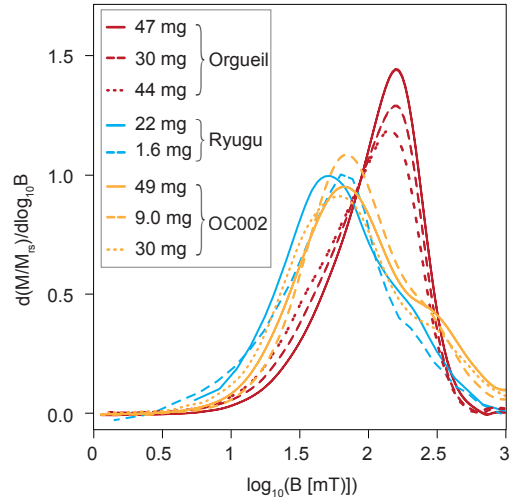
**Supplementary Fig. S1.** BSE-SEM images of a chalcopyrite grain in Oued Chebeika 002.



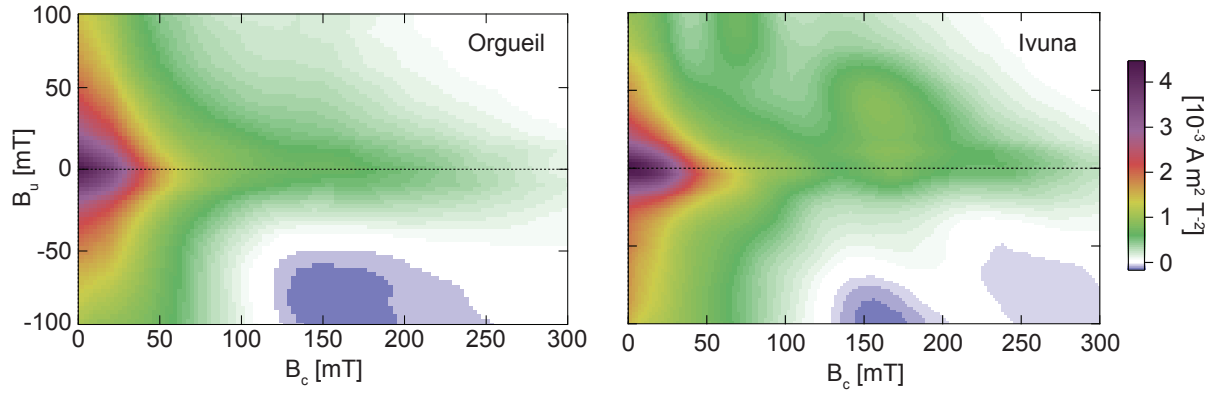
**Supplementary Fig. S2.** PSD-XRD pattern for Oued Chebeika 002.



**Supplementary Fig. S3.** Mass-normalized coercivity spectra of a 47-mg sample of Orgueil, a 73-mg sample of Ivuna, a 23-mg sample of Alais, a 21-mg sample of Ryugu (Maurel et al., 2024), 9-mg powdered sample and a 49-mg sample of Oued Chebeika 002. The grey dots show the derivative of the mass-normalized magnetic moment with respect to the logarithm of the applied field. The pink, blue and green distributions represent different populations of grains. The yellow line is the best fit to the data obtained by summing the three distributions. Shaded areas show the 95% confidence intervals of each distribution. This figure was generated using the MaxUnmix software (Maxbauer et al., 2016).



**Supplementary Fig. S4.**  $M_{RS}$ -normalized coercivity spectra of multiple samples of Orgueil and Oued Chebeika 002 (this study), and two samples of Ryugu: a 22-mg samples from chamber C (Maurel et al., 2024), and a 1.6-mg sample from chamber A (Sato et al., 2022).



**Supplementary Fig. S5.** FORC diagrams of a 47-mg sample of Orgueil and a 73-mg sample of Ivuna. The color scale applies to both panels.